

Fig. 2

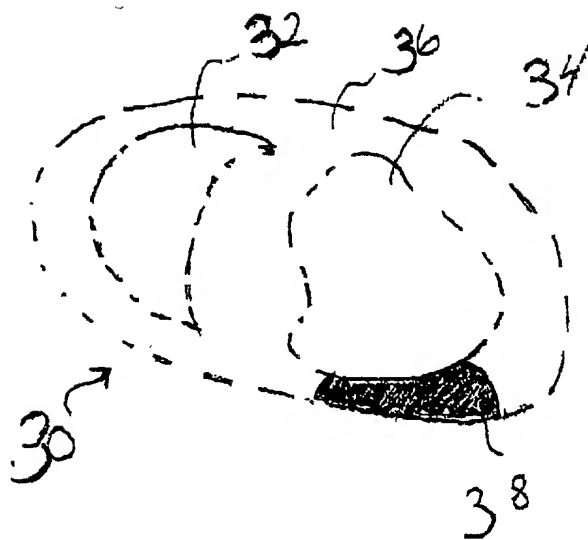


Fig. 3

Use of  $^{23}\text{Na}$  MRI to  
Obtain a Baseline  
Cardiac  $^{23}\text{Na}$  Image

405

Introduce Intravascular  
Paramagnetic Contrast  
Agent to Attenuate  $^{23}\text{Na}$   
MRI Signals for  
Ventricular Cavity  
Blood and Viable Well-  
Perfused Tissue

410

Select Quantity Of  
Paramagnetic Contrast  
Agent and Echo Time  
(TE) To Maximize  
Contrast between  
Ventricular Cavity  
Blood and Viable Well  
Perfused Tissue, and  
Myocardial Infarction

420

Image Cardiac Tissue  
using  $^{23}\text{Na}$  MRI  
Subsequent to Contrast  
Agent Administration

430

**Fig. 4**

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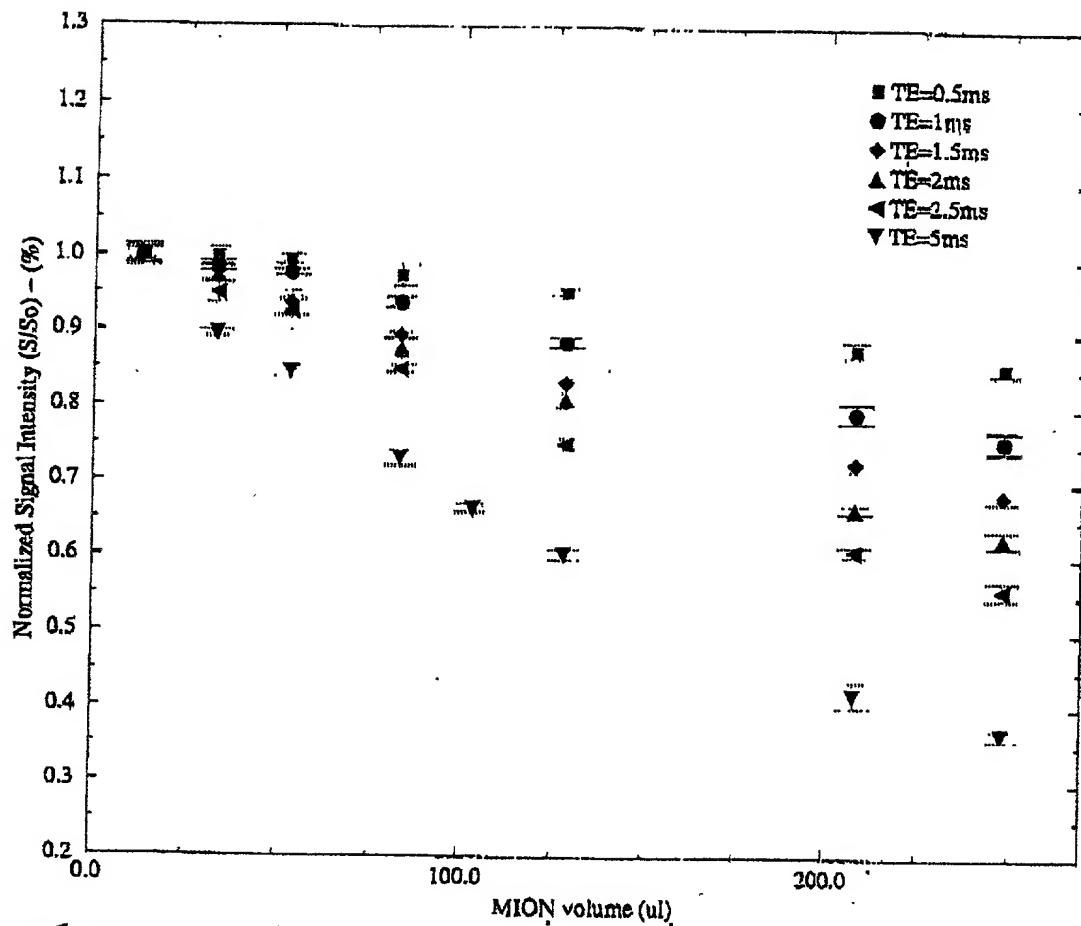
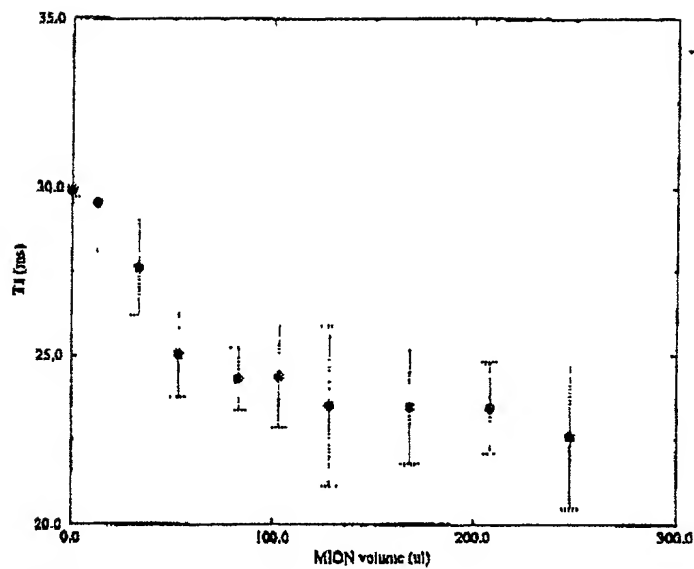


Figure 5: Normalized signal intensity variation with MION volume at different echo times (0.37-5 ms) in 80 ml of isolated canine blood. Larger MION volume and echo times lead to larger signal intensity reductions.

(A)



(B)

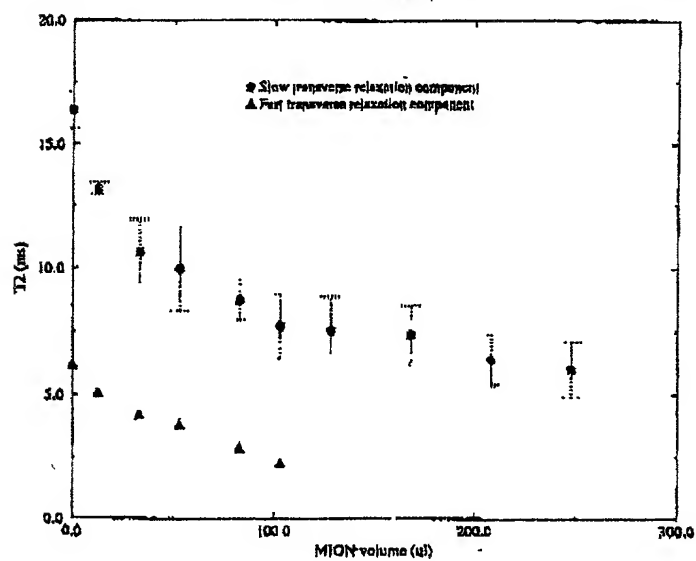


Figure 6 Blood (A)  $T_1$  and (B)  $T_2$  variation curves vs. MION volume in 80 ml of canine blood *in vitro*.

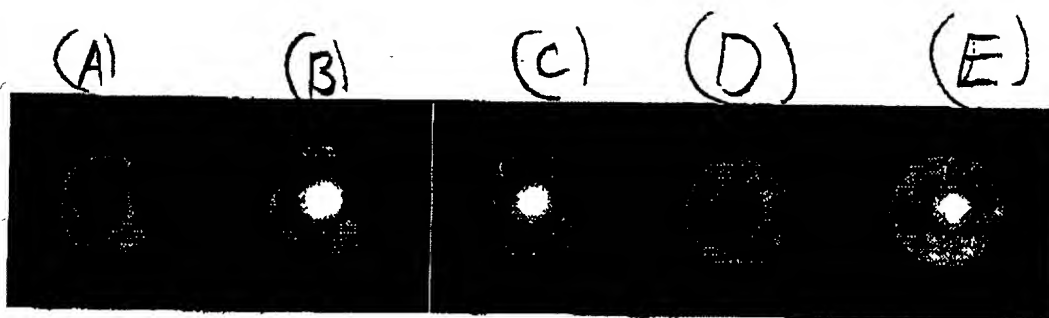


Figure 7 Two compartment annular cylindrical phantom. (A) Coronal image of the agarose gel mixed with NaCl (65 mM) at TE=0.37 ms; identical image with added blood at (B) TE=0.37 ms, and at (C) TE=5 ms. (D) Post-contrast image at TE=5 ms and at (E) TE=0.37 ms.



Figure 8 (A) Pre- and (B) post-contrast sequential contiguous axial  $^{23}\text{Na}$  images from an *in vivo* dog heart. Left ventricular blood and kidney regions appear hyper-intense due to their higher sodium content.



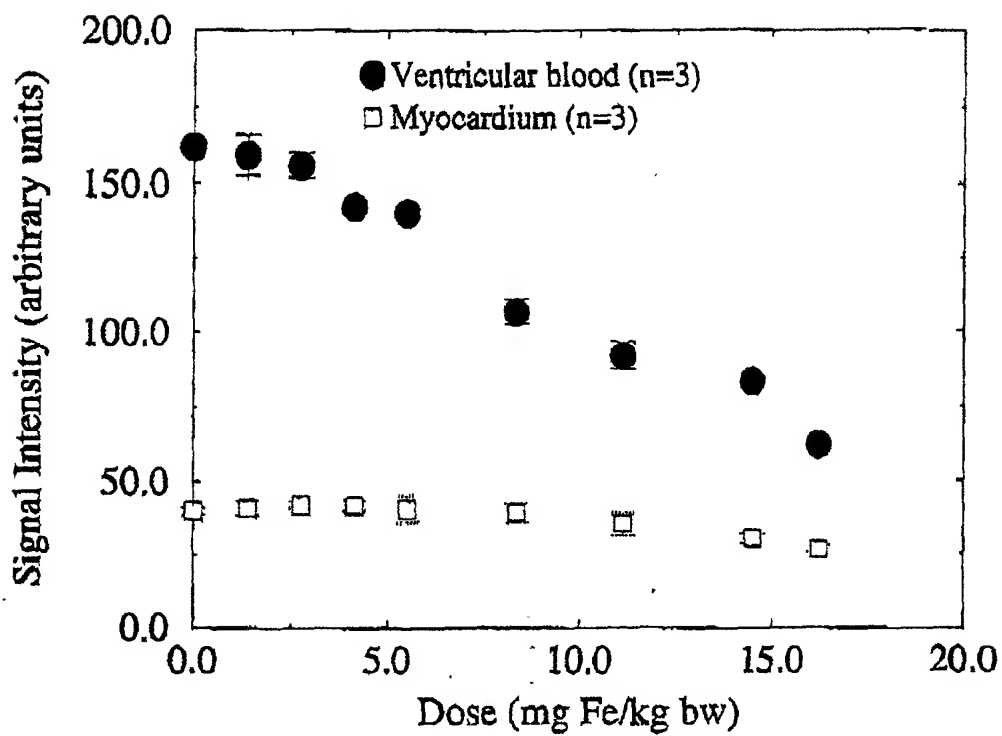


Figure 8: Signal variation of myocardial and ventricular blood regions with MION dose in *in vivo* dog hearts (TE=5 ms). Standard deviations represent signal variability from the three animals studied.



Figure 5 (A) Pre-contrast short axis  $^{23}\text{Na}$  MRI of an infarcted dog at TE=0.37 ms, and post-contrast images at (B) TE=0.37 ms, and at (C) TE=5 ms. (D) Corresponding TTC-stained slice (arrows indicate the location of MI).